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(54) Fabric softening composition

Textilweichmacherzusammensetzung

Composition assouplissante pour textiles

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US-A- 4 134 838	US-A- 4 137 180
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Description

[0001] This invention relates to the incorporation of a skin benefit agent in a fabric softening composition such that when fabrics treated with the fabric softening composition subsequently come into contact with the skin the fabrics deliver a benefit to the skin

[0002] Rinse added fabric softener compositions are well known. Typically such compositions contain a water insoluble amine salt and/or a quaternary ammonium fabric softening agent dispersed in water at a level of softening agent up to 7% by weight in which case the compositions are considered dilute, or at levels from 7% to 50% in which case the compositions are considered concentrates. Quaternary ammonium materials with long chain substituents have been used in fabric softening compositions for many years. Often they are used in conjunction with co-actives such as fatty acids or other relatively cheap materials which also provide softening benefits.

[0003] In addition to softening, fabric softening compositions desirably have other benefits.

[0004] GB 1 601 359 (Procter and Gamble) describes the use of esters as an ingredient in a fabric softening composition which also comprises a cationic surfactant selected from various specified groups. The ester is one of a number of nonionic fabric lubricants suggested.

[0005] GB 1 550 205 (Procter and Gamble) disclose formulations containing silicones, cationic compounds and glycerol monostearate for ease of ironing, and softening benefits may be obtained without the ester oil when other nonionic softeners are substituted for the glycerol monostearate.

[0006] Fabric softening compositions containing silicones are well known and are disclosed in GB 1 549 180 (Procter & Gamble) and EP 356 210 (Dow Corning).

[0007] EP 0 436 729 (Kanebo) discloses an industrial process for applying microcapsules to fabric, which when contacted with the skin are physiologically active.

[0008] US 4110498 (Benjamin et al) discloses a fabric softening composition comprising a cationic fabric softener and a lanolin alcohol based fabric softener.

[0009] Accordingly the present invention provides the use of a skin benefit agent as an ingredient in a fabric softening composition to enable the fabric softening composition to render textile fabrics treated with the composition capable of delivering the skin benefit agent to the skin with which the fabrics come into contact.

[0010] The present invention also provides the use of a skin benefit agent in a fabric softening composition to impart sensory and/or cosmetic benefits to the skin when fabrics treated with the composition come into contact with the skin.

[0011] The skin benefit agents are preferably substantive to fabric. A skin benefit agent is suitably any agent intended to be deposited onto the skin for the purpose of imparting sensory and/or cosmetic benefits thereto. It is preferred if the skin benefit agent changes the sensory perception of the skin. Examples of suitable skin benefit agents include moisturisers, skin softeners, emollients and sunscreens.

[0012] The skin benefit agent used in accordance with the present invention may be a liquid or solid provided that it is compatible with other ingredients of the fabric softening composition.

[0013] Preferred skin benefit agents include:-

a) waxes such as carnauba, spermaceti, beeswax, lanolin and derivatives thereof;

b) hydrophobic plant extracts;

c) hydrocarbons such as squalene and squalane;

d) higher fatty acids such as those having at least 12 carbon atoms, for example, lauric, myristic, palmitic, stearic, behenic, oleic, linoleic linolenic, lanolic, isostearic and poly unsaturated fatty acids (PUFA) acids;

e) higher fatty alcohols such as those having at least 12 carbon atoms, for example, lauryl, cetyl, stearyl, oleyl, behenyl, cholesterol and 2-hexadecanol alcohol;

f) esters such as cetyl octanoate, lauryl lactate, myristyl lactate, cetyl lactate, isopropyl myristate, myristyl myristate, isopropyl palmitate, isopropyl adipate, butyl stearate, decyl oleate, cholesterol isostearate, glycerol monostearate, glycerol distearate, glycerol tristearate, alkyl lactate, alkyl citrate and alkyl tartrate;

g) essential oils such as fish oils, mentha, jasmine, camphor, white cedar, bitter orange peel, ryu, turpentine, cinnamon, bergamont, citrus unshiu, calamus, pine, lavender, bay, clove, hiba, eucalyptus, lemon, starflower, thyme, peppermint, rose, sage, menthol, cineole, eugenol, citral, citronelle, borneol, linalool, geraniol, evening primrose, camphor, thymol, spirantol, pinene, limonene and terpenoid oils;

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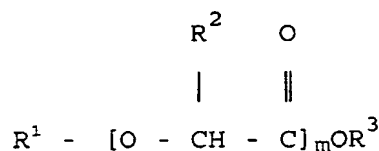
h) lipids such as cholesterol, ceramides, sucrose esters and pseudo-ceramides as described in EP-A-556 957;

i) vitamins for sensory and/or cosmetic use such as vitamins A and E, and vitamin alkyl esters, including vitamin C alkyl esters;

j) sunscreens such as octyl methoxyl cinnamate (Parsol (Trade Mark) MCX) and butyl methoxy benzoylmethane (Parsol (Trade Mark) 1789);

k) phospholipids; and

l) derivatives of alpha hydroxy acids such as materials of formula



wherein

R¹ is C_pH_qN_rO_s, where p is 0-20, q is 1-41, r is 0-3, and s is 0-3;

R² is C_tH_u where t is 0-20 and u is 1-41;

R³ is C_vH_wN_xO_y where v is 0-20, w is 1-41, x

is 0-3 and y is 0-3 or a metallic, ammonium or alkanolammonium anion; and

m is 1-10;

m) perfumes;

n) germicides for sensory and/or cosmetic use such as synthetic antimicrobials examples of which include salicylic acid; 1,6 bis (N-p-chlorophenyl biguanido) hexane (Chlorhexidine); chlorhexidine gluconate; 2,4,4-trichloro-2-hydroxy diphenyl ether (Irgosan DP300); imidazolidinyl urea; methyl, propyl, butyl, heptyl and benzyl p hydroxy benzoate;

2-bromo 2-nitropropane-1,3-diol; nonyl phenol ethoxylate iodine complex; 2 phenoxy ethanol; 3-dimethylol-5, 5-dimethyl hydantoin; and natural antimicrobials examples of which include willow extract, neem tree extract; bam-boo extract; and grapefruit extract;

o) mixtures of any of the foregoing components.

[0014] It is preferred if the skin benefit agents are perceived to condition the skin.

[0015] A particularly preferred skin benefit agent is a silicone.

[0016] Examples of preferred silicones are given in GB 1 549 180 (Procter & Gamble).

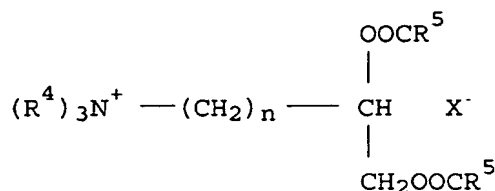
[0017] It is advantageous if the silicone is essentially a linear di(C₁-C₅)alkylpolysiloxane or (C₁-C₅)alkylarylpolysiloxane) Examples of such silicones include the polydimethylsiloxanes.

[0018] A second class of preferred skin benefit agents comprises are long chain hydrocarbons and esters as disclosed in EP 0 000 406 (Procter & Gamble).

[0019] It is preferred if the level of skin benefit agent is from 1 to 25 wt% of the total composition, more preferably from 1 to 10 wt%.

[0020] The fabric conditioning composition for use with this invention comprises a fabric softening material. Preferably the fabric conditioning material is a quaternary ammonium softening material. Advantageously the fabric softening composition comprises a water insoluble cationic softening material which is a compound having two C₁₂₋₂₈ alkyl or alkenyl groups connected to the N atom via one or more ester links.

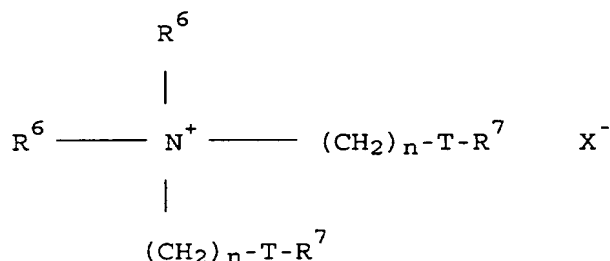
[0021] A preferred type of ester-linked quaternary ammonium fabric softening material for use in the compositions according to the invention can be represented by the formula:



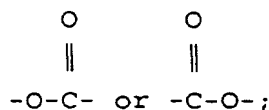
in which each R^4 group is independently selected from C_{1-4} alkyl, hydroxyalkyl groups or C_{2-4} alkenyl groups; and wherein each R^5 group is independently selected from C_{8-28} alkyl or alkenyl groups; X^- is any suitable anion and n is 0 or an integer from 1 to 5.

[0022] Materials of this class and their method of preparation are described in US 4 137 180 (Lever Brothers). Analysis of such materials shows that they also comprise small amounts of the corresponding dimethylamine salt, one such salt being N,N-dimethyl-2,3-bis[hardened tallowoyloxy]-propylamine hydrochloride. Advantageously these materials comprise small amounts of the corresponding monoester as described in US 4 137 180, for example, 1-hardened tallowoyloxy-2-hydroxy-3-trimethylammonium propane chloride.

[0023] A further preferred cationic softener is represented by the formula:



wherein each R^6 group is independently selected from C_{1-4} alkyl, hydroxyalkyl or C_{2-4} alkenyl groups; and wherein each R^7 group is independently selected from C_{8-28} alkyl or alkenyl groups; T is



and

n is 0 or an integer from 1 to 5 and X^- is any suitable anion.

[0024] A further advantage of using ester linked quaternary ammonium materials with the above formula is that included within a composition according to the invention the compositions have excellent viscosities and are stable on storage.

[0025] Preferably the level of ester linked quaternary ammonium compounds is at least 1% by weight of the composition, more preferably at least 3% by weight of the composition; especially interesting are concentrated compositions which comprise at least 7% of ester-linked quaternary ammonium compound. The level of ester-linked quaternary ammonium compounds preferably is from 1% to 80% by weight, more preferably from 4% to 32%, most preferably from 6% to 22%.

[0026] It is preferable if the ratio of fabric softening compound to skin benefit agent is from 5:1 to 1:5, more preferably from 4:1 to 2:3.

[0027] The softening composition may also comprise a nonionic stabilising agent selected from:

- i. linear C_8 to C_{22} alcohols alkoxyated with 10 to 20 moles of alkylene oxide; and

ii. a C₁₀ to C₂₀ alcohol or mixtures thereof.

[0028] Advantageously the nonionic stabilising agent is a linear C₈ to C₂₂ alcohol alkoxyated with 10 to 20 moles of alkylene oxide. Preferably the nonionic stabiliser has an HLB value of from 10 to 20, more preferably from 12 to 20.

[0029] Preferably, the level of nonionic stabiliser is within the range from 0 to 10% by weight, more preferably from 0 to 5% by weight, most preferably from 0 to 4% by weight. When nonionic stabilising agent is present the mole ratio of the quaternary ammonium compound to the nonionic stabilising agent is within the range from 40:1 to about 1:1, preferably within the range from 18:1 to about 3:1.

[0030] Preferably the compositions of the invention are liquids comprising an aqueous base.

[0031] The composition can also contain a co-active, for example, a C₈ - C₂₄ alkyl or alkenyl monocarboxylic acid or polymer thereof. Preferably saturated fatty acid are used, in particular, hardened tallow (C₁₆-C₁₈) fatty acids. Preferably the fatty acid is non-saponified, for example free oleic acid, lauric acid or tallow fatty acid. Lanolin or other nonionic fabric softening agents may also be used as co-actives.

[0032] The level of co-active material is preferably more than 0.1% by weight, more preferably more than 0.2% by weight.

[0033] Especially preferred are concentrates comprising from 0.5 to 20% by weight of co-active, more preferably 1% to 10% by weight. The weight ratio of quaternary ammonium/amine material to co-active material is preferably from 10:1 to 1:10.

[0034] The composition can also contain one or more optional ingredients, selected from non-aqueous solvents, pH buffering agents, perfumes, perfume carriers, fluorescers, colourants, hydrotropes, antifoaming agents, soil release agents, enzymes, optical brightening agents, opacifiers, anti-shrinking agents, anti-spotting agents, germicides, fungicides, anti-oxidants, anti-corrosion agents, and antistatic agents.

[0035] The invention will now be illustrated by the following nonlimiting examples. In the examples all percentages are expressed by weight.

Examples

[0036] Rinse conditioner formulations according to table 1, were prepared by melting the cationic compound in the silicone fluid with rapid stirring, demineralised water at 70°C. Stirring was continued for 10-15 minutes prior to subjecting the mixture to high shear agitation using a Silverson homogeniser for 10-15 minutes.

Table 1

Example	A	1	2
HEQ ¹	5	4	4
PDMS 5Pa.S (5000 cSt) ²		1	
PDMS 30Pa.S (30,000 cSt) ²			1
Water and minors	to 100		

1. 1,2-bis[hardened tallowyloxy]-3-trimethylammonium propane chloride/hardened tallow fatty acid - 6:1 quat: fatty acid, ex Hoechst.

2. Polydimethylsiloxane silicone fluid, various viscosities, ex Dow Corning.

3. C₁₂ nonionic ethoxylated with 12 moles of ethylene oxide per molecule (Genapol C200, ex Hoechst).

Silicone Transfer

[0037] The formulations of the Examples were used to treat terry towelling at a dosage of 2ml/L in 1L Tergotometer (TM) pots (liquor:cloth = 40:1, ambient temperature, 5 minutes, 65 rev/min). The terry towelling was spun to remove excess liquor and then line dried.

[0038] The treated terry towelling pieces were rubbed onto the front forearms of the assessor for one minute. Three tape strip samples of the skin surface were taken and analysed for silicon by XRF spectrometry. Silicone levels were recorded in counts per second (CPS) from S XRF spectrometry of the tape strips. Each figure represents the mean of three independent tape strip values.

[0039] Softening scores were obtained by comparison with previously prepared standards; on this scale standard 8 corresponds to untreated (harsh) terry and standard 2 corresponds to very soft terry.

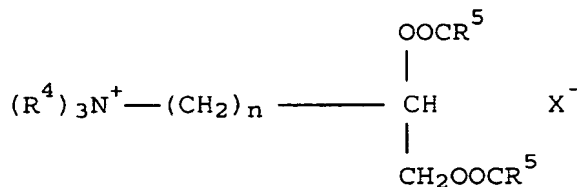
Table 2

Treatment	Softening Score	S (CPS)
Example 1	3.75	80
Example 2	2.5	68
Example A	3	16

[0040] All of the formulations gave excellent softening of the terry towelling. In addition, the formulations of examples 1 and 2 were found to transfer a significant level of silicone onto the skin.

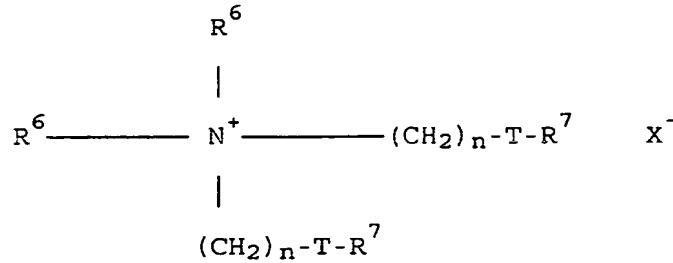
Claims

1. Use of a fabric softening composition comprising a skin benefit agent to deliver the skin benefit agent to the skin and to impart sensory and/or cosmetic benefits thereto when fabrics treated with the composition come into contact with the skin, **characterised in that** the skin benefit agent is a silicone.
2. Use of a fabric softening composition comprising a skin benefit agent to deliver the skin benefit agent to the skin and to impart sensory and/or cosmetic benefits thereto when fabrics treated with the composition come into contact with the skin, **characterised in that** the fabric softening composition comprises from 4% to 32% by weight of a water insoluble quaternary ammonium fabric softening compound having two C₁₂₋₂₈ alkyl or alkenyl groups connected to the N atom via one or more ester links.
3. Use of a fabric softening composition according to claim 2 in which the fabric softening compound is present in an amount from 6% to 22% by weight.
4. Use of a fabric softening composition according to claim 1 in which the silicone is an essentially linear di(C₁₋₅)alkyl polysiloxane or (C₁₋₅) alkylarylpolysiloxane.
5. Use of a fabric softening composition according to any one of the preceding claims in which the level of skin benefit agent is from 1 to 25 wt% of the total composition.
6. Use of a fabric softening composition according to claim 1 in which the composition further comprises a quaternary ammonium fabric softening material.
7. Use of a fabric softening composition according to claim 2 or claim 6 in which the quaternary ammonium compound is represented by the formula:

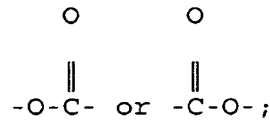


in which each R⁴ group is independently selected from C₁₋₄ alkyl, hydroxyalkyl groups or C₂₋₄ alkenyl groups; each R⁵ group is independently selected from C₈₋₂₈ alkyl or alkenyl groups; X⁻ is any suitable anion; and n is 0 or an integer from 1-5.

8. Use of a fabric softening composition according to claim 2 or claim 6 in which the quaternary ammonium compound is represented by the formula:



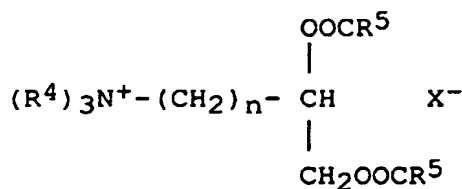
wherein each R^6 group is independently selected from C_{1-4} alkyl, hydroxyalkyl or C_{2-4} alkenyl groups; and wherein each R^7 group is independently selected from C_{8-28} alkyl or alkenyl groups; T is



n is 0 or an integer from 1-5 and X^- is any suitable anion.

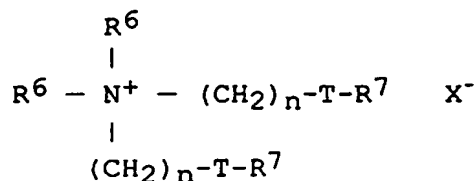
Patentansprüche

1. Verwendung einer textilweichmachenden, ein der Haut einen Vorteil verleihendes Mittel umfassenden Zusammensetzung zur Abgabe des der Haut einen Vorteil verleihenden Mittels an die Haut und um sensorische und/oder kosmetische Vorteile dafür zu verleihen, wenn mit der Zusammensetzung behandelte Textilien mit der Haut in Kontakt kommen, **dadurch gekennzeichnet, dass** das der Haut einen Vorteil verleihende Mittel ein Silikon ist.
2. Verwendung einer textilweichmachenden, ein der Haut einen Vorteil verleihendes Mittel umfassenden Zusammensetzung zur Abgabe des der Haut einen Vorteil verleihenden Mittels an die Haut und um sensorische und/oder kosmetische Vorteile dafür zu verleihen, wenn mit der Zusammensetzung behandelte Textilien mit der Haut in Kontakt kommen, **dadurch gekennzeichnet, dass** die textilweichmachende Zusammensetzung 4% bis 32 Gewichtsprozent einer in Wasser unlöslichen textilweichmachenden quaternären Ammoniumverbindung mit zwei C_{12-28} -Alkyl- oder -Alkenylgruppen, gebunden an das N-Atom über ein oder mehrere Esterbindungen, umfasst.
3. Verwendung einer textilweichmachenden Zusammensetzung nach Anspruch 2, wobei die textilweichmachende Verbindung in einer Menge von 6% bis 22 Gewichtsprozent vorliegt.
4. Verwendung einer textilweichmachenden Zusammensetzung nach Anspruch 1, wobei das Silikon ein im Wesentlichen lineares Di-(C_{1-5})alkylpolysiloxan oder (C_{1-5})Alkylarylpolysiloxan ist.
5. Verwendung einer textilweichmachenden Zusammensetzung nach einem der vorangehenden Ansprüche, wobei der Anteil des der Haut einen Vorteil verleihenden Mittels 1 bis 25 Gewichtsprozent der gesamten Zusammensetzung ist.
6. Verwendung einer textilweichmachenden Zusammensetzung nach Anspruch 1, wobei die Zusammensetzung weiterhin ein textilweichmachendes quaternäres Ammoniummaterial umfasst.
7. Verwendung einer textilweichmachenden Zusammensetzung nach Anspruch 2 oder Anspruch 6, wobei die quaternäre Ammoniumverbindung wiedergegeben wird durch die Formel:

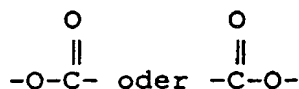


worin jede Gruppe R^4 unabhängig voneinander aus C_{1-4} -Alkyl-, Hydroxyalkylgruppen oder C_{2-4} -Alkenylgruppen ausgewählt ist; jede Gruppe R^5 unabhängig voneinander aus C_{8-28} -Alkyl- oder -Alkenylgruppen ausgewählt ist; X^- ein beliebiges geeignetes Anion darstellt; und n 0 oder eine ganze Zahl von 1-5 ist.

8. Verwendung einer textilweichmachenden Zusammensetzung nach Anspruch 2 oder Anspruch 6, wobei die quaternäre Ammoniumverbindung wiedergegeben wird durch die Formel:



worin jede Gruppe R^6 unabhängig voneinander aus C_{1-4} -Alkyl-, Hydroxyalkyl- oder C_{2-4} -Alkenylgruppen ausgewählt ist; und worin jede Gruppe R^7 unabhängig voneinander aus C_{8-28} -Alkyl- oder -Alkenylgruppen ausgewählt ist, T



darstellt;
 n 0 oder eine ganze Zahl von 1-5 ist und X^- ein beliebiges geeignetes Anion ist.

Revendications

- Utilisation d'une composition assouplissante pour tissus comprenant un agent bénéfique pour la peau afin de délivrer un agent bénéfique pour la peau sur la peau et de conférer à celle-ci des avantages sensoriels et/ou cosmétiques lorsque la composition vient en contact avec la peau, **caractérisée en ce que** l'agent bénéfique pour la peau est une silicone.
- Utilisation d'une composition assouplissante pour tissus comprenant un agent bénéfique pour la peau afin de délivrer un agent bénéfique pour la peau sur la peau et de conférer à celle-ci des avantages sensoriels et/ou cosmétiques lorsque la composition vient en contact avec la peau, **caractérisée en ce que** la composition assouplissante pour tissus comprend de 4 % à 32 % en poids d'un composé assouplissant pour tissus ammonium quaternaire non soluble dans l'eau ayant deux groupes alkyles ou alkényles en C_{12} - C_{28} reliés à l'atome d'azote via une ou plusieurs liaisons ester.
- Utilisation d'une composition assouplissante pour tissus selon la revendication 2, dans laquelle le composé assouplissant pour tissus est présent dans une quantité allant de 6 % à 22 % en poids.
- Utilisation d'une composition assouplissante pour tissus selon la revendication 1, dans laquelle la silicone est un

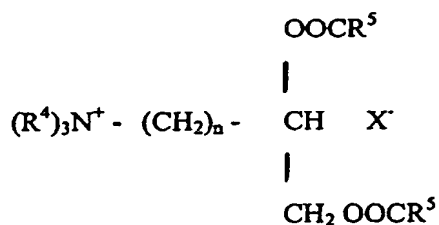
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di (C₁ - C₅) alkyl polysiloxane essentiellement linéaire ou un alkylarylpolysiloxane en (C₁ - C₅).

5. Utilisation d'une composition assouplissante pour tissus selon l'une quelconque des revendications précédentes dans laquelle le niveau d'agent bénéfique pour la peau est de 1 à 25 % en poids du total de la composition.

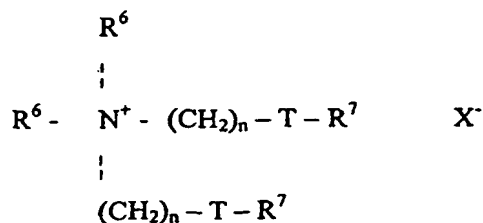
6. Utilisation d'une composition assouplissante pour tissus selon la revendication 1, dans laquelle la composition comprend en outre un matériau assouplissant pour tissus ammonium quaternaire.

7. Utilisation d'une composition assouplissante pour tissus selon la revendication 2 ou la revendication 6, dans laquelle le composé ammonium quaternaire est représenté par la formule suivante :

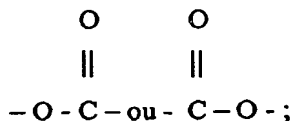


dans laquelle chaque groupe R⁴ est indépendamment sélectionné à partir des groupes alkyles, hydroxyalkyles en C₁ - C₄ ou des groupes alkényles en C₂ - C₄ ; et dans laquelle chaque groupe R⁵ est indépendamment sélectionné à partir des groupes alkyles ou alkényles en C₈ - C₂₈ ; X⁻ est n'importe quel anion approprié et n est 0 ou un nombre entier de 1 à 5.

8. Utilisation d'une composition assouplissante pour tissus selon la revendication 2 ou la revendication 6, dans laquelle le composé ammonium quaternaire est représenté par la formule :



dans laquelle chaque groupe R⁶ est indépendamment sélectionné à partir des groupes alkyles, hydroxyalkyles en C₁ - C₄ ou des groupes alkényles en C₂ - C₄ ; et dans laquelle chaque groupe R⁷ est indépendamment choisi à partir des groupes alkyles ou alkényles en C₈ - C₂₈ ;
T est



et

n est 0 ou un nombre entier de 1 à 5 et X⁻ est n'importe quel anion approprié.